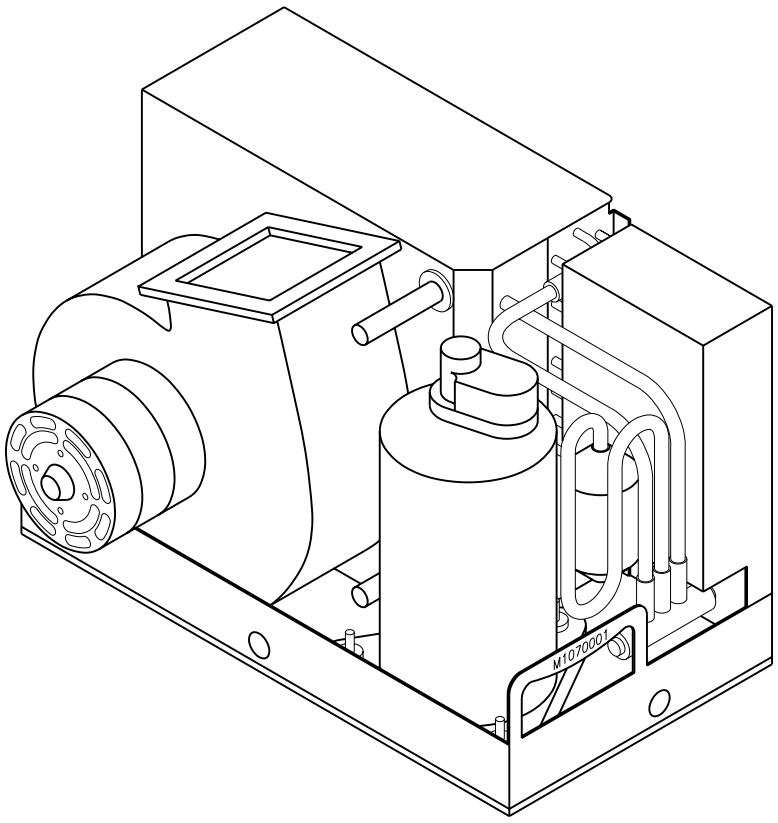
vector compact

Installation & Operation



MARINE AIR SYSTEMS®
AIRRRRRRRR
by Dometic GROUP

Direct Expansion Systems
Revised: 20140321
L-2254

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IF YOU HAVE A DIGITAL CONTROL

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INTRODUCTION

Congratulations on the purchase of your Marine Air Systems' Vector Compact® air conditioner. No matter which of the following features was the reason for your purchase of this air conditioner, we are sure it will meet your needs and will give you many years of efficient and trouble free use. The Vector Compact self-contained direct expansion air conditioners are designed for marine applications incorporating the following features:

- Patented compact design with the condenser coil in the evaporator shroud
- High efficiency rotary compressor or scroll (24K) compressors
- Cupronickel condenser coil
- Enhanced fin designed evaporator coil
- 2" deep drain pan with multiple condensate drain locations
- Anti-vibration base pad
- Pre-charged and pre-wired systems for easy connections
- Rotatable blower assembly
- Charge Guard® ensures environmental protection and system integrity

This manual is intended to provide the information necessary to ensure proper installation, operation, and maintenance of the unit. The figures that are referenced throughout this manual can be found immediately after the warranty section. Improper installation or misunderstood operating procedures can result in unsatisfactory performance and/or premature failure of these units, so before proceeding ***please read this manual completely.***

The Vector Compact units are covered under the existing Dometic Environmental Corporation (Dometic) warranty policy contained in this manual. In the interest of product improvement, Dometic's specifications and design are subject to change without prior notice.

Clean Air Act Amendments of 1990 [Title VI - Section 608(C-1)]

"Effective July 1, 1992, it shall be unlawful for any person, in the course of maintaining, servicing, repairing, or disposing of an appliance or industrial process refrigeration, to knowingly vent or otherwise knowingly release or dispose of any Class I* or Class II** substance used as a refrigerant in such appliance (or industrial process refrigeration) in a manner which permits such substance to enter the environment. De minimis releases associated with good faith attempts to recapture and recycle or safely dispose of any such substances shall not be subject to the prohibition set forth in the proceeding sentence."

* Class I substances include CFC-12

** Class II substances include HCFC-22

Marine Air Systems

Marine Air Systems (MAS) is a product of Dometic Environmental Corporation. Dometic is a recognized leader in the design and manufacture of high-performance comfort control systems, refrigeration products and battery charging products for demanding environments, including commercial and recreational marine craft, vehicles and other applications. We offer an unparalleled scope of products, dealer networks, applications support, engineering resources and production capabilities throughout the world. Our team has many years of experience in the design, manufacture, application and support of our products. Our practical experience and design capability allows our application engineers and sales representatives to offer optimum solutions for your environmental control requirements. Product lines also include well known Cruisair, Grunert, and Sentry.

How It Works

Your self-contained air conditioner consists of four main components and a refrigerant gas circulating through the system. The BLOWER draws warm cabin air across the fins on the EVAPORATOR where the heat from the air is transferred to the refrigerant in the evaporator coil. As the refrigerant evaporates from a liquid into a gas it absorbs the heat from the cabin air. The COMPRESSOR then compresses the refrigerant gas and pumps it through the outer tube in the CONDENSER COIL. The seawater pump circulates cool seawater through the inner tube in the condenser coil, this cools the refrigerant and condenses it into a liquid. The heat from the refrigerant is exchanged to the seawater and discharged overboard. The liquid refrigerant is then passed through the EVAPORATOR COIL and the cycle repeats. Removing heat from the cabin air lowers its temperature. The cooled air is blown through the ducting and out the supply air grille(s). For reverse cycle heating, the refrigerant flows in the opposite direction through the reversing valve. Heat is transferred from the seawater in the condenser coil to the refrigerant and then to the air blowing through the evaporator into the cabin. Seawater temperature will directly affect the a/c unit's efficiency. This a/c unit can effectively cool your boat in water temperatures up to 90°F and heat in water temperatures as low as 40°F. See Figure 1.

INSTALLATION

Unpacking and Inspection

When the equipment is received, all items should be carefully checked against the packing list to ensure all cartons have been received. Move units in the normal “up” orientation as indicated by the arrows on each carton. Examine cartons for shipping damage, removing the units from the cartons if necessary. If the unit is damaged, the carrier should make the proper notation on the delivery receipt acknowledging the damage.

CAUTION: When unpacking and installing the 3-knob control (if mechanical option is used), care must be taken not to kink or break the copper cap tube when uncoiling the sensing bulb. The cap tube is hollow and kinking or sharp bends will inhibit system operation.

Safety Considerations

VERY IMPORTANT: ***Never install your air conditioner in the bilge or engine room areas. Insure that the selected location is sealed from direct access to bilge and/or engine room vapors. Do not terminate condensate drain line within three (3) feet of any outlet of engine or generator exhaust systems, nor in a compartment housing an engine or generator, nor in a bilge, unless the drain is connected properly to a sealed condensate or shower sump pump.***

Installation and servicing of this system can be hazardous due to system pressure and electrical components. When working on this equipment, always observe precautions described in the literature, tags and labels attached to the unit. Follow all safety codes. Wear safety glasses and work gloves and place a fire extinguisher close to the work area. The following is a summary of the labels on the unit:

⚠ Danger

Electrical shock hazard. Disconnect voltage at main panel or power source before opening any cover. Failure to comply may result in injury or death.

⚠ Warning

This component does not meet federal requirements for ignition protection. Do not install in spaces containing gasoline engines, tanks, LPG/CPG cylinders, regulators, valves or fuel line fittings. Failure to comply may result in injury or death.

Notice

This component is charged with hydrochloro-fluorocarbon (HCFC) refrigerant R22. Effective July 1, 1992 it shall be unlawful for any person to knowingly vent or otherwise knowingly release any class 1 (CFC) or class 2 (HCFC) substance as a refrigerant in a manner which permits such substance to enter the atmosphere per the clean air act of 1990. Public law 101-549 Title IV Section 608-C. Failure to comply may result in severe penalties, including fines and imprisonment.

⚠ Warning

To minimize the hazard of electrical shock and personal injury, this component must be effectively grounded. Refer to the installation guidelines for further information.

⚠ Caution

High compressor temperature is normal.
Do not touch.

Placement of System

Selecting a good location for your air conditioner is the most important part of your preparations. Be sure to consider the size of the area you are cooling, the air distribution needs, and the size of the unit you have chosen. Keeping in mind that cool air has a tendency to fall, it is highly recommended that you locate the supply air grille as high as possible in the cabin. See Figures 2 and 3.

The Vector Compact unit should be installed as low as possible, **BUT NEVER IN THE BILGE OR ENGINE ROOM AREAS. INSURE THAT THE SELECTED LOCATION IS SEALED FROM DIRECT ACCESS TO BILGE AND/OR ENGINE ROOM VAPORS**. Installing the unit as low as possible (such as under a V-berth, dinette seat or bottom of a locker) and ducting the supply air as high as possible, creates an ideal airflow condition. This type of installation will prevent short or premature cycling.

The unit should be positioned on a firm, level, horizontal surface and the condensate drain line should run downward from the unit to a suitable drain location. Plan all connections which must be made including ducting, condensate drain, seawater in and out, electrical power connections, location of control, and seawater pump placement, to assure easy access for routing and servicing.

Minimum Tools Required

- Screws drivers
- Pliers
- Pipe wrenches
- Wire cutters/crimpers
- Drill and assorted bits
- Jig saw
- Duct tape
- Electrical tape
- Threaded seal tape
- Beding compound to seal thru hull fittings
- Hardware to secure unit, pump, strainer, grilles & control panel

Condensate Drains

The condensate drain pan is 2" high with up to four drain locations. During conditions of high humidity, condensate may be produced at a rate of approximately 1/2 gallon per hour. With this in mind, it is important to route condensate drains downward to a sump pump. It is not recommended to route condensate drains to the bilge. After the condensate drain installation is complete, test the installation by pouring a quart of water into the pan and checking for good flow. See Figure 4.

For installation of the condensate drain:

1. Remove the aft facing watertight plug from the base pan of the a/c unit (see note).
2. Slip the solid washer and the liquid-seal washer onto the PVC fitting in that order.
3. Connect the fitting through the exposed hole in the base pan with the locking nut.
4. Securely tighten with two (2) wrenches to provide a proper seal.
5. Attach a 5/8" I.D. reinforced hose to the hose barb and secure with stainless steel hose clamps.
6. Install the condensate drain hose downhill from the unit and aft to a sump.
7. Two drain fittings may be used and the hoses teed together provided there is a minimum 2" drop form the bottom of the base pan to the tee connection.

Note: The reason to use the "aft facing" drain location is so that water will tend to drain out of the pan when the vessel is under way. However, the boat owner should inspect the pan when the vessel is at rest. If water is collecting in the pan along an edge other than "aft facing", then the drain on that edge should also be utilized. This will help to prevent water from standing in the pan. See item 7 for instructions on connecting two drain lines.

IMPORTANT! Do not terminate condensate drain line within three (3) feet of any outlet of engine or generator exhaust systems, nor in a compartment housing an engine or generator, nor in a bilge, unless the drain is connected properly to a sealed condensate or shower sump pump.

Blower Assembly

With the Vector Compact you can achieve multi-directional supply air discharge from a single unit by rotating the blower to the desired location. It is ideal for tight installations as 130° of rotation are available with which to position the blower. Its advanced design allows the blower to be easily removed for rotating or servicing by removing the two mounting ring screws and the screws attaching the blower to the drain pan. Rotate the blower to allow the most direct flow of air to the supply air grille. Reinstall the mounting screws. Plug any unused screw holes in the blower to prevent air loss.

Mounting Brackets

The a/c unit is supplied with a base pan that also serves as a condensate pan. Mounting clip brackets are provided to secure the base pan onto a flat, horizontal surface. See Figure 5.

Supply & Return Air Grilles and Transition Boxes

Install the supply air grille as high as possible in a location that will provide uniform air distribution throughout the cabin, grille louvers should be directed upward. The return air grille should be installed as low and close to the a/c unit as possible to insure direct uninterrupted airflow to the evaporator. The return air grille should have a minimum four inches (4") of clearance in front of it, free from any furniture or other obstructions. In no instance should a supply air discharge be directed towards a return air grille, as this will cause the system to short cycle. Allow for adequate clearance behind the supply air grille(s) for the transition box and ducting connection. The table in Figure 8 shows minimum grille sizes. See the MAINTENANCE section of this manual for return air filter cleaning instructions.

Ducting

Good airflow is critical for the performance of the entire system. It is highly dependent on the quality of the ducting installation. The ducting should be run as straight, smooth and taut as possible minimizing the number of 90° bends (two tight 90° bends can reduce airflow by 25%). The table in Figure 8 shows minimum duct diameters and their corresponding supply and return air grille minimum area in square inches. If a transition box is used, the total area of supply air ducts going out of the box should at least equal the area of the supply duct feeding

the box. To calculate the square inch area of a round duct, multiply the radius by itself (r^2) and multiply that number by 3.1416(π). See Figure 8.

The following is a summary of proper ducting connections:

1. Pull back the fiberglass insulation exposing the inner mylar duct hose.
2. Slide the mylar duct hose around the mount ring until it bottoms out.
3. Screw 3 or 4 stainless steel sheet metal screws through the duct hose into the transition ring.

   Make sure to catch the wire in the duct hose with the heads of the screws. Do not use band clamps, as the hose will slide off.
4. Wrap duct tape around the ducting and ring joint to prevent any air leaks.
5. Pull the insulation back up over the mylar to the ring and tape this joint.
6. Remove excess ducting and use the same connection method at the supply air grille.

All ducting should:

- Be appropriately sized for each application.
- Run as smoothly and taut as possible.
- Have as few bends or loops as possible.
- Be securely fastened to prevent sagging during boat operation.
- Have all excess ducting lengths trimmed off.
- Not be flattened or kinked.
- Insulated when located in high heat load areas (hull side, mechanical compartments, etc.).
- Be properly protected against potential damage when routed through open areas.

Seawater Pump and Plumbing

Several guidelines should be followed during the installation of the seawater system. Since the circulation pump is centrifugal and not self-priming, it must be mounted so that it is always at least one foot below the water line regardless of which tack the vessel is on. Pump may be mounted horizontally or vertically, however the discharge must always be above the inlet. Pump head should be rotated toward the direction of water flow. ***Install the seawater speed scoop intake as far below the water line and as close to the keel as possible in any application, but especially on a sailboat, to keep the intake in the water when the boat heels over so that air does not get into the system.*** (See Figure 7 for proper installation.)

The speed scoop intake must face forward and not be shared with any other pump. A seawater strainer is mandatory between the shut off valve (seacock) and the pump to protect the pump from any foreign matter. ***Failure to install a seawater strainer will void the pump warranty.*** The seawater system should be installed with an upward incline from the speed scoop & seacock, through the strainer, to the inlet of the pump and then up to the inlet of the a/c unit's condenser coil. The discharge from the a/c unit should then run to the seawater outlet thru-hull fitting which should be located where it can be visually checked for water flow and as close as practicable to the waterline to reduce noise. All hose connections shall be secured by means of double/reversed stainless steel hose clamps. Use threaded seal tape on all threaded connections. The following is a summary of the seawater system installation:

1. Install the speed scoop thru-hull inlet as close to the keel and as far below the water line as possible, facing forward. Bed the scoop with a marine sealant designed for underwater use.
2. Install a bronze, full flow seacock on the speed scoop thru-hull inlet.
3. Install a seawater strainer below the level of the pump with access to filter.
4. Mount the pump above the strainer and at least one foot below the waterline.
5. Connect the seacock and strainer with an uphill run of reinforced marine grade hose.
6. Connect the discharge from the pump uphill to the bottom inlet of the a/c unit's condenser coil with 5/8" hose. Connect the discharge from the condenser coil to the overboard discharge thru-hull fitting with 5/8" hose.
7. Avoid loops, high spots or the use of 90° elbows with seawater hose (each 90° elbow is equivalent to 2.5' of hose and a 90° elbow on the pump outlet is equivalent to 20' of hose).
8. Double clamp all hose connections with stainless steel clamps, reversing the clamps.
9. Use threaded seal tape on all threaded connections.
10. ***Connect all metallic parts in contact with seawater to the vessel's bonding system including the speed scoop inlet, strainer, pump and the air conditioner. Failure to do so will void warranty.***

Electrical Connections, Grounding and Bonding

All a/c units have a terminal strip mounted inside the electric box. The terminal strip is labeled for proper connections of the electrical supply, ground wires and pump circuits. A wiring diagram is provided in the electrical box and in this manual. The wiring diagram in the electrical box supersedes the one in this manual and ABYC standards.

The correct size circuit breaker should be used to protect the system as specified on the a/c unit's data plate label. A minimum of 12 AWG boat cable should be used to supply power to the a/c unit and the seawater pump. All connections shall be made with ring or captive fork terminals. **Turn off a/c power supply circuit breaker before opening electric box.** See Figures 9 and 10.

Each a/c unit installed requires its own dedicated circuit breaker. If there is only one a/c unit installed, the seawater pump does not require a circuit breaker; the wiring from the seawater pump is connected to the terminal strip in the electric box. If two or more a/c units use the same seawater pump, the pump wires will be connected to a pump relay panel (PRP) which in turn has its own dedicated circuit breaker sized for the pump (20 amp max). Please see the wiring diagram furnished with the PRP (NOTE: PRP triac must have its mounting screw installed in order to dissipate heat). Electrical connections in the bilge and/or below the waterline should use heat shrink type butt splices.

Field wiring must comply with ABYC electrical codes. Power to the unit must be within the operating voltage range indicated on the data plate. Properly sized fuses or HACR circuit breakers must be installed for branch circuit protection. See data plate for maximum fuse/circuit breaker size (mfs) and minimum circuit ampacity (mca). All units must be effectively grounded to minimize the hazard of electrical shock and personal injury.

The following are to be observed:

1. AC (alternating current) grounding (green wire) must be provided with the AC power conductors and connected to the ground terminal (marked "GRND") at the AC power input terminal block of the unit(s), per ABYC standard E-8, or equivalent.
2. Connections between the vessel's AC system grounding conductor (green wire) and the vessel's DC (Direct Current) negative or bonding system should be made as part of the vessel's wiring, per ABYC standard E-9, or equivalent.
3. When servicing or replacing existing equipment that contains a chassis-mounted ground stud, the service person or installer must check the vessel's wiring for the existence of the connection required in item 2 above.

ABYC standards are available from:

American Boat and Yacht Council
3069 Solomons Island Rd.
Edgewater, MD 21036
Telephone: (410) 956-1050

The a/c unit must be connected to the ship's bonding system to prevent corrosion due to stray electrical current or voltage. All pumps, metallic valves and fittings in the seawater circuit that are isolated from the a/c unit by PVC or rubber hoses must be individually bonded to the vessels bonding system also. This will help eliminate any possibility of corrosion due to stray current or voltage.

FAILURE TO PROPERLY GROUND AND BOND THE SYSTEM WILL VOID WARRANTY!

3 Phase Notice

It is extremely important to insure that wiring and phase sequencing of a three phase power source is correct. Marine wiring standards call for power source phases L1, L2, and L3 to be color-coded BLACK, WHITE, and RED, respectively. These must be connected to the unit with the proper sequence, otherwise, it will not operate properly. If the wiring sequence is incorrect, the unit's compressor (Scroll type only) and pump (if applicable) will run in the reverse direction at a significantly increased noise level.

Manual Control Panel (MCP) Installation

The MCP should be located within cap tube length of the a/c unit. The 3 knob MCP is configured either vertically (shown) or horizontally. The cut out size is 2.5" by 7.0", see MCP (Figure 6) for orientation. Once the cut out is made, carefully uncoil the copper cap tube with return air sensor (copper bulb) and route the control wires and cap tube through the hole and back to the a/c unit ***using caution not to kink the cap tube***. Mount the return air sensor into the clips provided with the Vector Compact unit. If the return air sensor cannot be mounted on the evaporator coil, mount it behind the return air grille. The sensor must be mounted in the return air stream. Make electrical connections according to the wiring diagram found in the electric box and/or in this manual. See Figure 9.

Installation Checklist

(Review prior to installation)

Note: Refer to the Elite and Passport I/O manuals for installation and operation of those digital controls.

Seawater Cooling System

- ❑ Speed scoop located as far below the water line and as close to the keel as possible
- ❑ Shut off valve (sea cock) and speed scoop properly sealed and tight

- ❑ Seawater pump is at least one foot below water line and securely mounted
- ❑ Strainer mounted below pump with access to filter
- ❑ Double/reversed stainless steel hose clamps on all hose connections
- ❑ Threaded seal tape on all threaded connections
- ❑ Hose runs uphill from speed scoop and sea cock to strainer, pump and a/c unit, then downhill (if possible) from a/c unit to overboard discharge
- ❑ Water flowing freely from overboard discharge while pump is running
- ❑ Pump relay panel, if used, must have its own circuit breaker sized for the pump (20 amp max)
- ❑ All metal fittings should be bonded

Mounting

- ❑ Not in engine room or bilge areas, must be sealed away from exhaust or fumes
- ❑ Proper spacing allowed around unit
- ❑ Attached to solid level platform with hold down clips provided
- ❑ Condensate drain routed aft and down hill to a sealed sump (not bilge)
- ❑ Blower rotated toward supply air grille

Electrical

- ❑ The wiring diagram is located in the electrical box. If that diagram is damaged or if you need a copy, please call Dometic with the unit part number, serial number, and wiring diagram number, all of which are located on the unit data plate.
- ❑ All butt connections on pumps wire tightly crimped and heat shrunk
- ❑ AC power source installed and grounded/bonded in accordance with ABYC standards
- ❑ Control wires connected to terminal strip with captive fork or ring terminals
- ❑ Circuit breakers sized according to specifications on the data plate label
- ❑ Digital display cable is connected at both ends
- ❑ Pump Relay Panel (if used) has a dedicated circuit breaker sized for the pump but not to exceed 20 amps maximum.

Grilles and Ducting

- ❑ Supply air grille mounted as high as possible
- ❑ Return air grille mounted as low and as close to the a/c unit as possible
- ❑ Return air grille mounted away from bilge vapors or exhaust fumes
- ❑ Ducting is pulled taut, straight, smooth and properly connected with no excess

OPERATION

Mechanical Control Panel (MCP) Operation

Note: Do not turn the unit off and immediately turn it back on. Wait at least 30 seconds.

Quick Start Operations Checklist

Note: Do not turn the unit off and immediately turn it back on. Allow at least 30 seconds for refrigerant pressure equalization.

TROUBLESHOOTING

General Troubleshooting

Fault: Will not start.

Possible Reason/Correction

1. **A/C circuit breaker is off.**
2. **Control is not turned on.**
3. **Wrong wiring at terminal strip.**
4. **Push-on butt connectors became disconnected during installation.**
5. **Input line voltage is insufficient.**

Fault: Fan is not running.

Check specific control troubleshooting section

Fault: No cooling or heating.

Possible Reason/Correction

1. **Temperature set point is satisfied.**
2. **Obstructed seawater flow.**
3. **Seawater pump may be air-locked.**

Loss refrigerant gas.

5. **Seawater temperature too high for cooling or too low for heating.**

Fan coil is iced (in cooling).

7. **Fan is not running.**
8. **Seawater plumbing is air-locked.**
9. **Digital control is programmed for Cool or Heat only, or mechanical control thermostat is rotated to far towards either Cooler or Warmer setting.**
10. **High pressure switch open (in cooling) due to improper seawater flow.**
11. **High pressure switch open (in heating) due to improper airflow.**
12. **High-pressure switch is open in heating mode.**
13. **Compressor's thermal overload is open due to either of the above reasons.**

Fault: No heating.

Possible Reason/Correction

1. **Unit is "cool only", or if reverse cycle, reversing valve may be stuck.**

Fault: Low airflow.

Possible Reason/Correction

1. **Airflow is blocked.**
2. **Fan Coil is iced.**

Fault: Fan coil is iced.

Possible Reason/Correction

1. **Thermostat set point is too low.**
2. **Improper airflow.**
3. **Supply air is short-cycling.**
4. **Humidity level too high.**
5. **When all else fails.**

Fault: Water coil is iced in the heating mode.

Seawater temperature is below 40°F.

Fault: System runs continuously.

Possible Reason/Correction

1. **Set point temperature is improperly set: too low for cooling or too high for heating.**
2. **Porthole or hatches open.**
3. **Seawater temperature too high for cooling or to low for heating.**
4. **Improper air sensor location.**

Digital Controls Troubleshooting

Fault: Digital display panel is not lit.

Possible Reason/Correction

1. **8-pin display cable plugs are not making contact (unplugged, dirty, bent, or broken pins).**

Fault: Fan is not running or runs continuously.

Possible Reason/Correction

1. **Digital control is programmed for either fan cycling with compressor or continuous fan operation.**

Fault: Fan is not running but the compressor is.

Possible Reason/Correction

1. Failed triac on Passport I/O circuit board.

Fault: Fan runs continuously although it is set to cycle with compressor.

Possible Reason/Correction

1. Failed triac on Passport I/O circuit board.

Fault: No cooling or heating.

Possible Reason/Correction

1. Digital control programmed for heat or cool only.
2. "HPF" or "LPF" is displayed.

Fault: No heat.

Possible Reason/Correction

1. Digital Control may be set to Electric Heat, not Reverse Cycle.

Fault: Unit switches to heat while in cool mode.

Possible Reason/Correction

1. De-icing feature enabled due to coil icing up.

Fault: Fan coil is iced.

Possible Reason/Correction

1. Improper airflow.

Fault: System runs continuously.

Possible Reason/Correction

1. Improper air sensor location.

Fault: "HPF" is displayed.

Possible Reason/Correction

1. High-pressure switch is open (in cooling) due to improper seawater flow.
2. High-pressure switch open (in heating) due to improper airflow.

Fault: "LPF" is displayed.

Possible Reason/Correction

1. Low-pressure switch is open due to low seawater and/or low return air temperatures.
2. Low pressure switch is open due to loss of refrigerant.

Fault: "ASF" is displayed.

Possible Reason/Correction

1. Indicates failed face plate air sensor, alternate air sensor or display cable.
2. Damaged jack/socket in display head or on circuit board.

Fault: "PLF" is displayed (Elite Digital Control only).

Possible Reason/Correction

1. Indicates that seawater flow through the condenser coil is insufficient.

MCP Mechanical Control Panel Troubleshooting

Fault: Fan is not running.

Possible Reason/Correction

1. MCP system switch is not set properly.
2. MCP fuse blown.
3. Wire became disconnected or loosened during installation.

Fault: System runs continuously.

Possible Reason/Correction

1. Improper MCP air sensor location.

MAINTENANCE

Reversing Valves

Seawater Strainer

Condenser Coil Cleaning

CAUTION: **WARNING:**Return Air Filters

Winterization

Note: Collect all discharged liquids and recycle or dispose of in a proper manner.

MANUFACTURERS LIMITED WARRANTY AGREEMENT

The following warranty is extended to cover marine air conditioners manufactured or supplied by Dometic Environmental Corporation, and is subject to qualifications indicated. Dometic warrants for the periods set forth below that products manufactured or supplied by it will be free from defects in workmanship and material, provided such products are installed, operated, and maintained in accordance with Dometic's written instruction.

ALL IMPLIED WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE TERMS AND PERIODS OF WARRANTY SET FORTH BELOW AND, TO THE EXTENT PERMITTED BY LAW, ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED.

Warranty with the Elite or Passport I/O digital controls (Coverage applies to units manufactured on or after 03/01/03 and applies only to units equipped with Elite or Passport I/O digital controls at the Dometic factory.): Components comprising of the Passport I/O circuit boards, Elite or Passport I/O digital displays, and associated cables are warranted for a period of three (3) years from the date of installation, but not to exceed four (4) years from the date of manufacture at the Dometic factory. All other components comprising a complete system (excluding pumps and pump relay panels) on a new installation are warranted for a period of two (2) years from the date of installation, but not to exceed three (3) years from the date of manufacture at the Dometic factory. Pumps and pump relay panels are warranted for a period of one (1) year from the date of installation, but not to exceed two (2) years from the date of purchase. OEM installed equipment warranties begin with the purchase of the vessel, not from the date of installation.

Warranty with MCP (Mechanical Control Panel) control: Components comprising a complete system on a new installation are warranted for a period of one (1) year from the date of installation, but not to exceed two (2) years from the date of manufacture at the Dometic factory. OEM installed equipment warranties begin with the purchase of the vessel, not from the date of installation.

In addition, Dometic will pay labor costs and travel as outlined in its **Schedule of Limited Warranty Allowances** for removal and reinstallation of such components for a period of one (1) year from the date of installation, but not to exceed two (2) years from the date of manufacture at the Dometic factory. OEM installed equipment warranties begin with the purchase of the vessel, not from the date of installation. Warranty will be paid in accordance with our established schedule of allowances. Compensation for warranty repairs is only made to Dometic authorized service companies.

Dometic will repair, or replace at its option, components found to be defective due to faulty materials or workmanship, when such components, examined by an authorized service dealer or a factory service representative, are found to have a defect for which the company is responsible. **Refer to Manufacturer's Limited Warranty Policy** for complete coverage and exclusions. Replacement components are warranted for the duration of the remaining warranty period in effect on the original component. In the event that a unit has to be returned to the factory, it must be properly packaged to prevent shipping damages. If packaging is not available, Dometic will provide it at no charge. The warranty may be voided on any piece of equipment or component that is damaged due to improper packaging.

This limited warranty is extended in lieu of all other warranties, agreements or obligations, expressed or implied, concerning Dometic's components. This warranty is extended only to the original purchaser and is not transferable. This warranty shall be governed by the laws of the State of Florida and gives the original first end user definite legal rights.

This warranty does not cover damages incidental and/or consequential to the failure of Dometic's equipment including but not limited to; normal wear, accident, misuse, abuse, negligence, improper installation, lack of reasonable and necessary maintenance, alteration, civil disturbance or acts of God.

No person or dealer is authorized to extend any other warranties or to assume any other liabilities on Dometic's behalf, unless made or assumed in writing by an officer of Dometic.

DESCRIPTION OF FIGURES

Fig 1. Overview of Vector Compact

Fig 2. Placement of Vector Compact

Fig 3. Spacing Allowances & Unit Dimensions

Fig 4. Installation of Condensate Drain

Fig 5. Mounting Brackets

Fig 6. 3-Knob Control

Fig 7. Seawater Pump and Plumbing Configuration

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Fig 9. Wiring Diagrams for Mechanical Controls (VCM5-16 & 24K)

Fig 10. Wiring Diagrams for Mechanical Controls (VCM5-16HV & 24K 230V/3Ph)

Fig 11. Wiring Diagrams for Digital Controls (VCD5-16 & VCD/VHD 24K)

Fig 12. Wiring Diagrams for Digital Controls (VCD5-16HV & VCD/VHD 24K 460V/3Ph)

Fig 13. Wiring Diagrams for Digital Controls (VCD18K-HV & VCM18K-HV)

Fig 1. Overview of Vector Compact

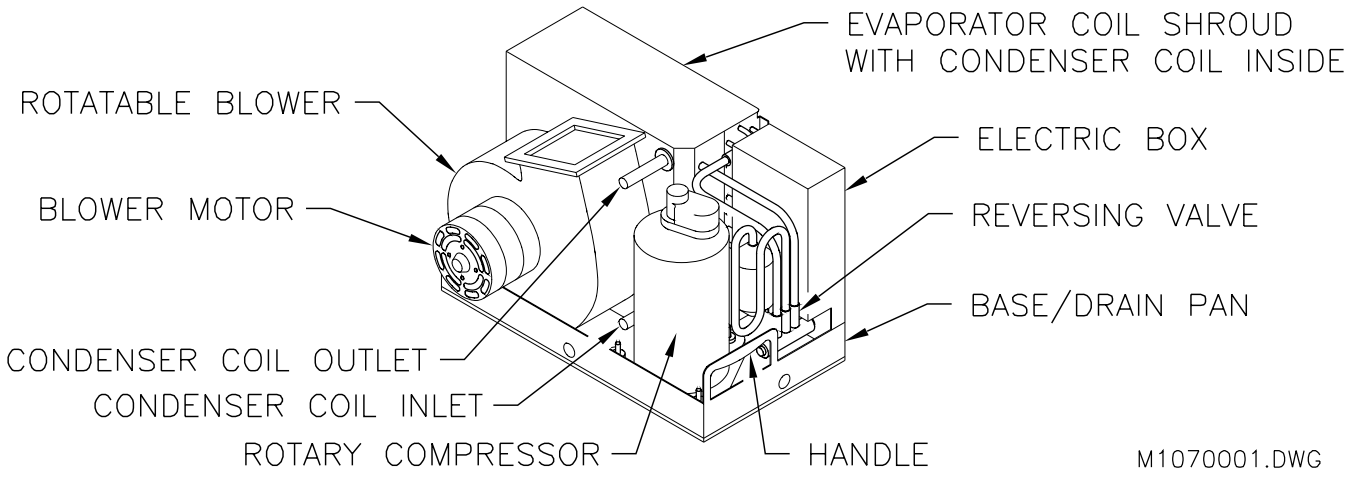

Fig 2. Placement of Vector Compact

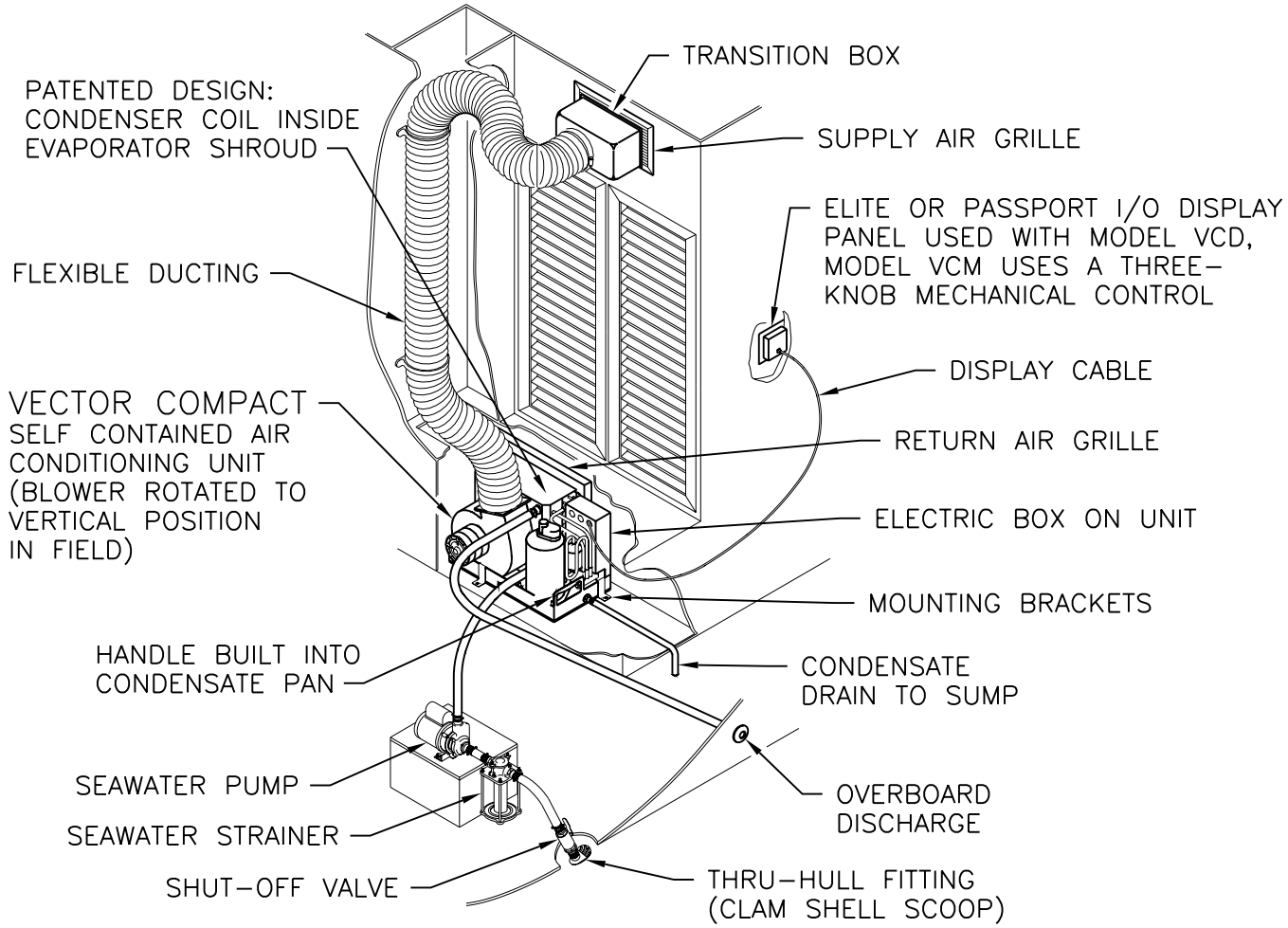

Fig 3. Spacing Allowances & Unit Dimensions

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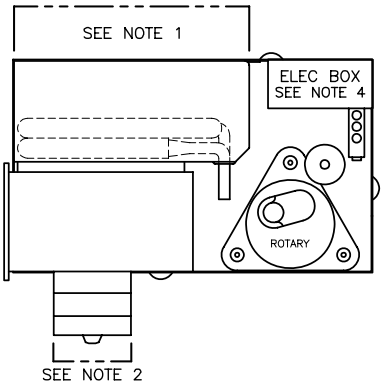
REV	DATE	REVISION DESCRIPTION	DWG	APR
A	3/7/03	REVISED TABLE DIMS,CAD200-03	DRR	RAP
B	3/28/03	REVISED DIMS & MODEL NUMBERS,CAD251-03	DKM	RAP
C	5/24/04	ADDED VCD/M18K/1-HV TO TABLE,CAD345-04	DRR	RAP
D	7/15/05	ADDED 5KHV DIMS,REVISED TO /2 FROM /1,CAD428-05	DRR	RAP

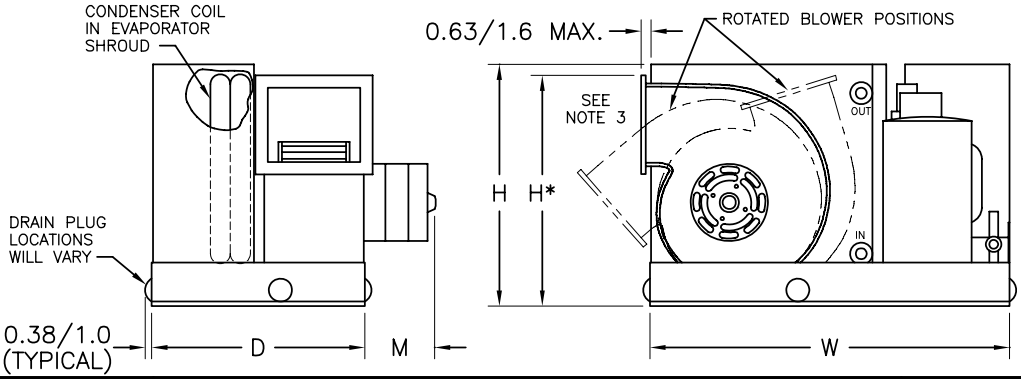
DWG CREATED BY CAD034-03

SPACE ALLOWANCES TO CONSIDER WHEN DESIGNING AREA FOR A/C UNITS

1) Allow a minimum 3.00" [7.62cm] of air space in front of evaporator for return air intake if it is adjacent to a bulkhead.
2) Allow a minimum 1.00" [2.54cm] of air space for electric blower motor ventilation. Not applicable with HV units.
3) For flexible ducting connection:
   A) If mount ring is used, allow 2.00" [5.08cm] for the ring, 1.00" [2.54cm] for duct bend radius and add the diameter of the ducting to get total distance as measured from blower outlet.
   B) When using a transition box consider that each box is unique to it's application. A general rule is to add 1.00" [2.54cm] to the largest ring diameter used to get size of box (5" min.). Add mount ring and ducting as figured above to get approximate space needed to install transition box. Also note that the universal T-box is 8.00" [20.32cm] tall measured from blower outlet.
4) Allow enough room for removal of electric box cover for servicing.

NOTE: The above dimensions are minimums. Enough space should be allocated for installation and serviceability.





MODEL NUMBER	DIMENSIONS (inches/centimeters) H	H*	W	D	M	WEIGHT (lbs/kg)
VCD/M5K/2	11.25/28.6	10.50/26.7	16.5/41.9	9.00/22.9	3.75/9.5	42.0/19.1
VCD/M7K/2	11.50/29.2	12.25/31.1	18.00/45.7	9.63/24.5	3.25/8.3	48.7/22.0
VCD/M10K/2***	12.25/31.1	13.5/34.3	19.25/48.9	9.63/24.5	3.75/9.5	54.3/24.6
VCD/M12K/2***	13.00/33.0	13.63/34.6	19.25/48.9	9.63/24.5	3.75/9.5	56.3/25.6
VCD/M16K/2	13.63/34.6	13.63/34.6	19.25/48.9	11.38/28.9	4.00/10.2	63.8/28.9
VCD/M24K/2	18.00/45.7	19.25/48.9	24.75/62.9	15.25/38.7	3.50/8.9	120.0/54.4
VCD/M5K/2-HV	11.25/28.6	10.50/26.7	16.5/41.9	9.00/22.9	1.00/2.5**	42.0/19.1
VCD/M7K/2-HV	12.00/30.5	12.25/31.1	18.00/45.7	9.63/24.5	1.00/2.5**	48.7/22.0
VCD/M10K/2-HV	12.25/31.1	13.5/34.3	19.25/48.9	10.50/26.7	1.00/2.5**	54.3/24.6
VCD/M12K/2-HV	13.00/33.0	13.63/34.6	19.25/48.9	10.50/26.7	1.00/2.5**	56.3/25.6
VCD/M16K/2-HV	13.63/34.6	13.63/34.6	19.25/48.9	11.38/28.9	1.00/2.5**	63.8/28.9
VCD/M18K/2-HV	14.00/35.6	15.50/39.3	21.00/53.3	12.00/30.5	1.00/2.5**	74.0/33.6

*HEIGHT TO TOP OF BLOWER OUTLET, BLOWER MAY BE ROTATED DOWN BELOW EVAP SHROUD 'H'
**MOTOR IS INSIDE FAN HOUSING ON HIGH VELOCITY (HV) UNITS, HOWEVER, ALLOW 1"/2.5cm FOR BLOWER RING MOUNTING FLANGE AND/OR BLOWER CAPACITOR ON THAT SIDE OF UNIT
***LEFT HAND UNITS SAME DIMENSIONS EXCEPT FOR VCD/M10K/2 AND VCD/M12K/2 WHICH INCREASE IN DEPTH TO 10.5"

ALL DIMENSIONS ARE NOMINAL – VERIFY ALL CRITICAL DIMENSIONS WITH MAS ENGINEERING.

Dometic Environmental Corporation - Marine Air

VCD/M5-24K (HV), VECTOR COMPACT PSPRT I/O & MECH SPACING ALLOWANCES AND DIMENSIONS

DATE: 1/21/03	DWG BY: DRR	PART NUMBER: N/A	DWG M1020049	REV D
SCALE: 1:10	APR BY: RAP			

Fig 4. Installation of condensate drain

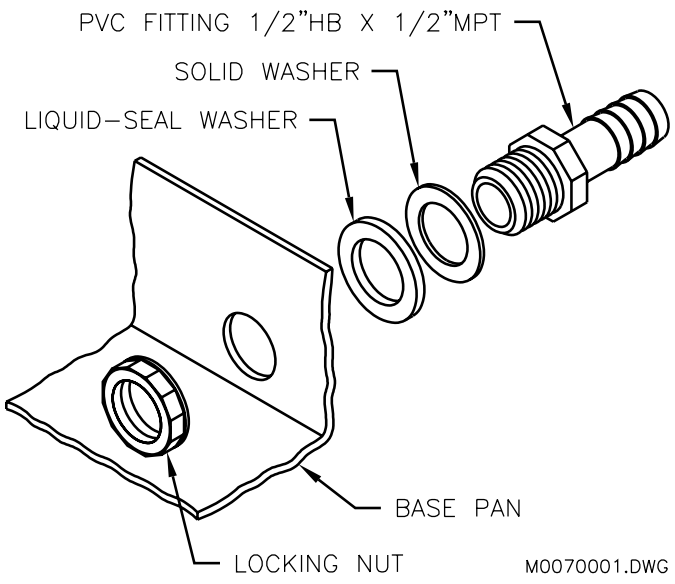


Fig 5. Mounting brackets

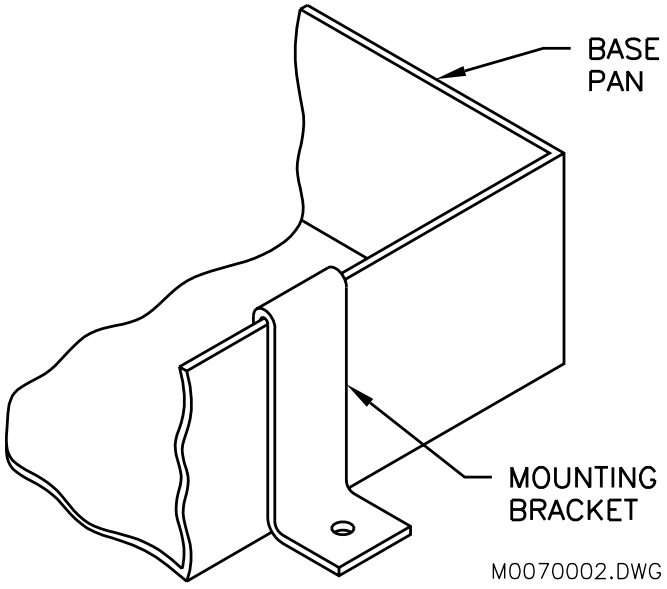


Fig 6. 3-Knob Control

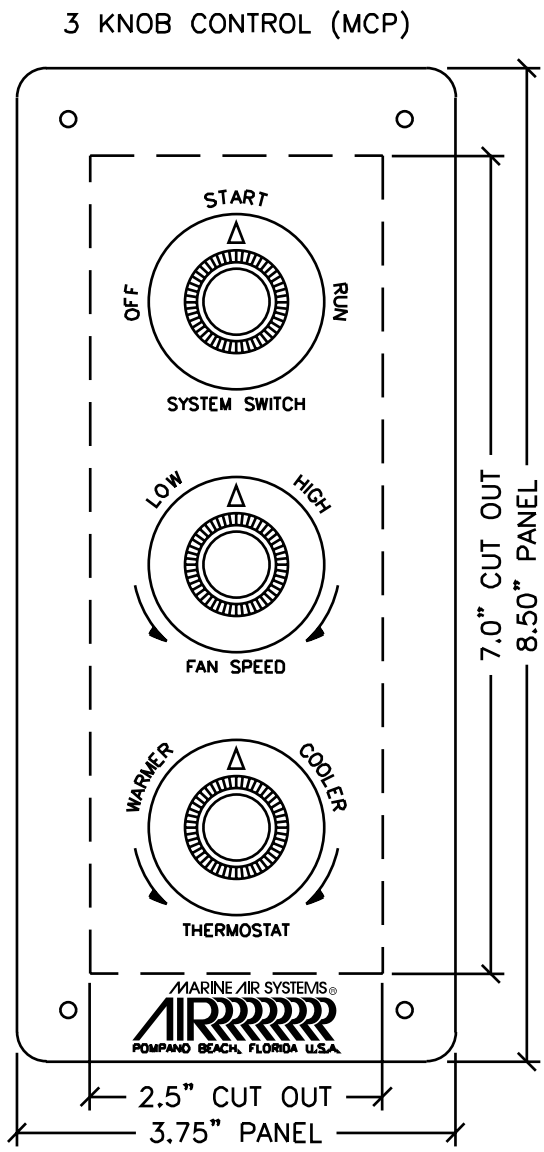


Fig 7. Seawater pump and plumbing configuration

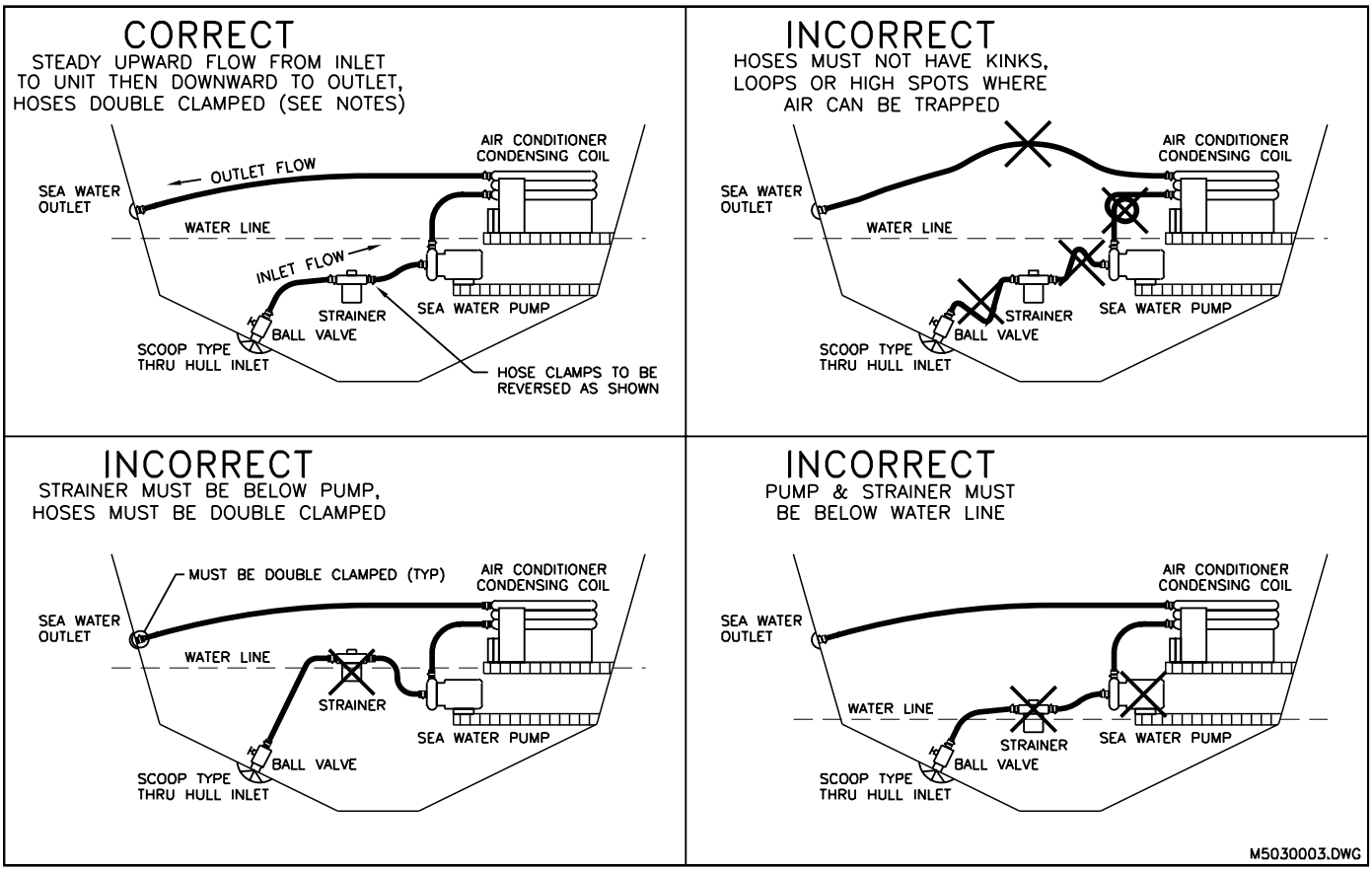
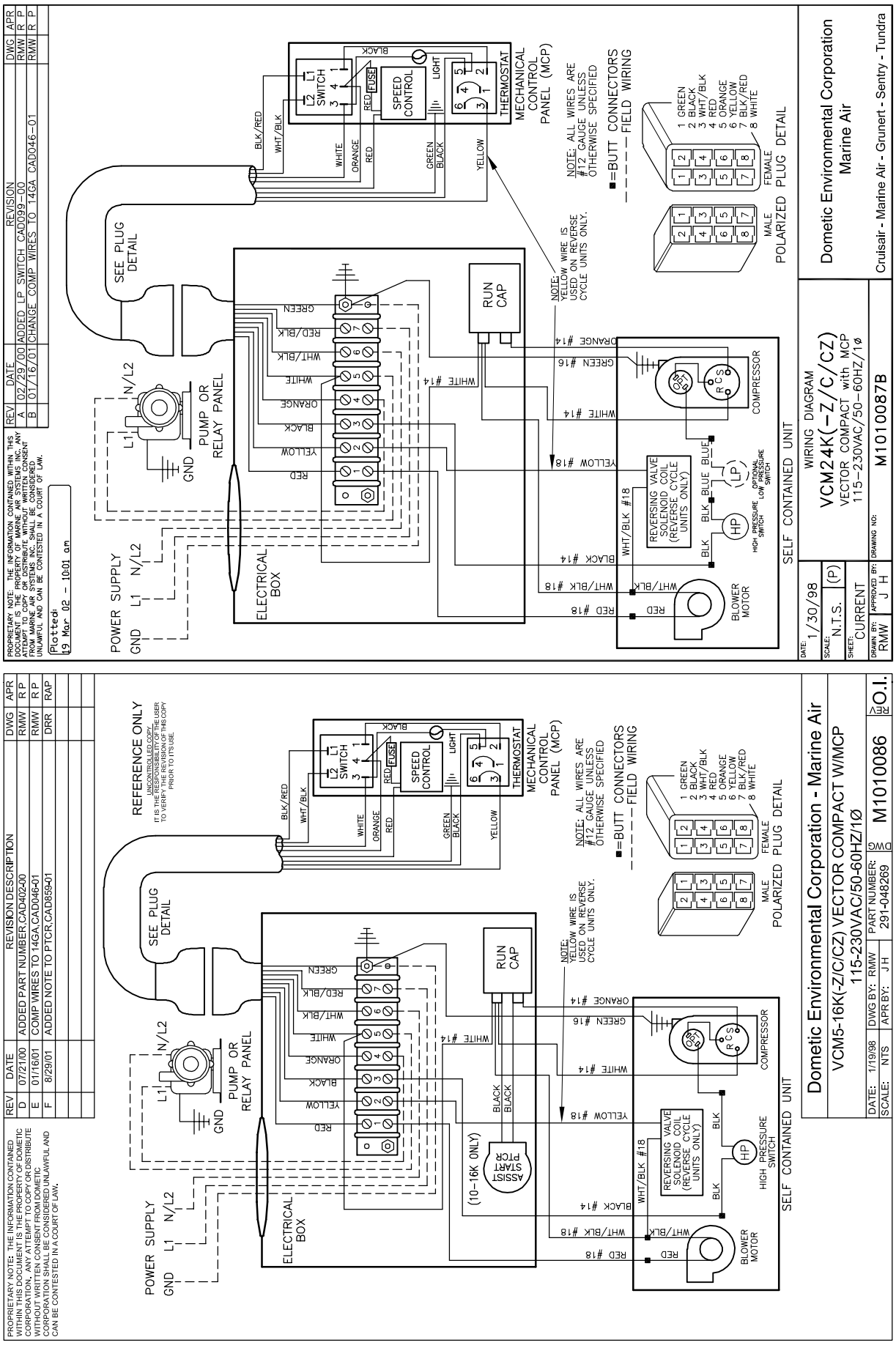


Fig 8. Ducting and Grille Sizing

Model	5K	7K	10K	12K	16K	18K	24K
Duct Diameter (in/mm)	4/102	5/127	6/152	6/152	7/178	7/178	8/203
Duct Area (sq in/cm)	12.6/81	19.6/126	28.3/183	28.3/183	38.5/248	38.5/248	50.3/325
R/A Grille (sq in/cm)	64/413	80/516	100/645	130/839	160/1032	200/1290	240/1548
S/A Grille (sq in/cm)	32/206	45/290	60/387	70/452	80/516	100/645	140/903

Fig 9. Wiring Diagrams for Mechanical Controls (VCM5-16 & 24K)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REV DATE REVISION DWG APR
A 02/29/00 ADDED LP SWITCH CAD099-00 RMW R P
B 01/16/01 CHANGE COMP WIRES TO 14GA CAD046-01 RMW R P
Plotted: 19 Mar 02 - 10:01 am
POWER SUPPLY
GND L1 N/L2
ELECTRICAL BOX
SEE PLUG DETAIL
PUMP OR RELAY PANEL
L1
N/L2
GND
RUN CAP
COMPRESSOR
REVERSING VALVE SOLENOID COIL (REVERSE CYCLE UNITS ONLY)
HIGH PRESSURE SWITCH
OPTIONAL LOW PRESSURE SWITCH
BLOWER MOTOR
NOTE: YELLOW WIRE IS USED ON REVERSE CYCLE UNITS ONLY.
NOTE: ALL WIRES ARE #12 GAUGE UNLESS OTHERWISE SPECIFIED
■=BUTT CONNECTORS
– – – – = FIELD WIRING
MECHANICAL CONTROL PANEL (MCP)
SPEED CONTROL
SWITCH
THERMOSTAT
FUSE
LIGHT
1 GREEN
2 BLACK
3 WHT/BLK
4 RED
5 ORANGE
6 YELLOW
7 BLK/RED
8 WHITE
MALE
FEMALE
POLARIZED PLUG DETAIL
SELF CONTAINED UNIT
DATE: 1/30/98
SCALE: N.T.S. (P)
SHEET: CURRENT
WIRING DIAGRAM
VCM24K(–Z/C/CZ)
VECTOR COMPACT with MCP
115–230VAC/50–60HZ/1ø
DRAWN BY: RMW
APPROVED BY: J H
DRAWING NO: M10100878
Dometic Environmental Corporation
Marine Air
Cruisair - Marine Air - Grunert - Sentry - Tundra
REFERENCE ONLY
UNCONTROLLED COPY
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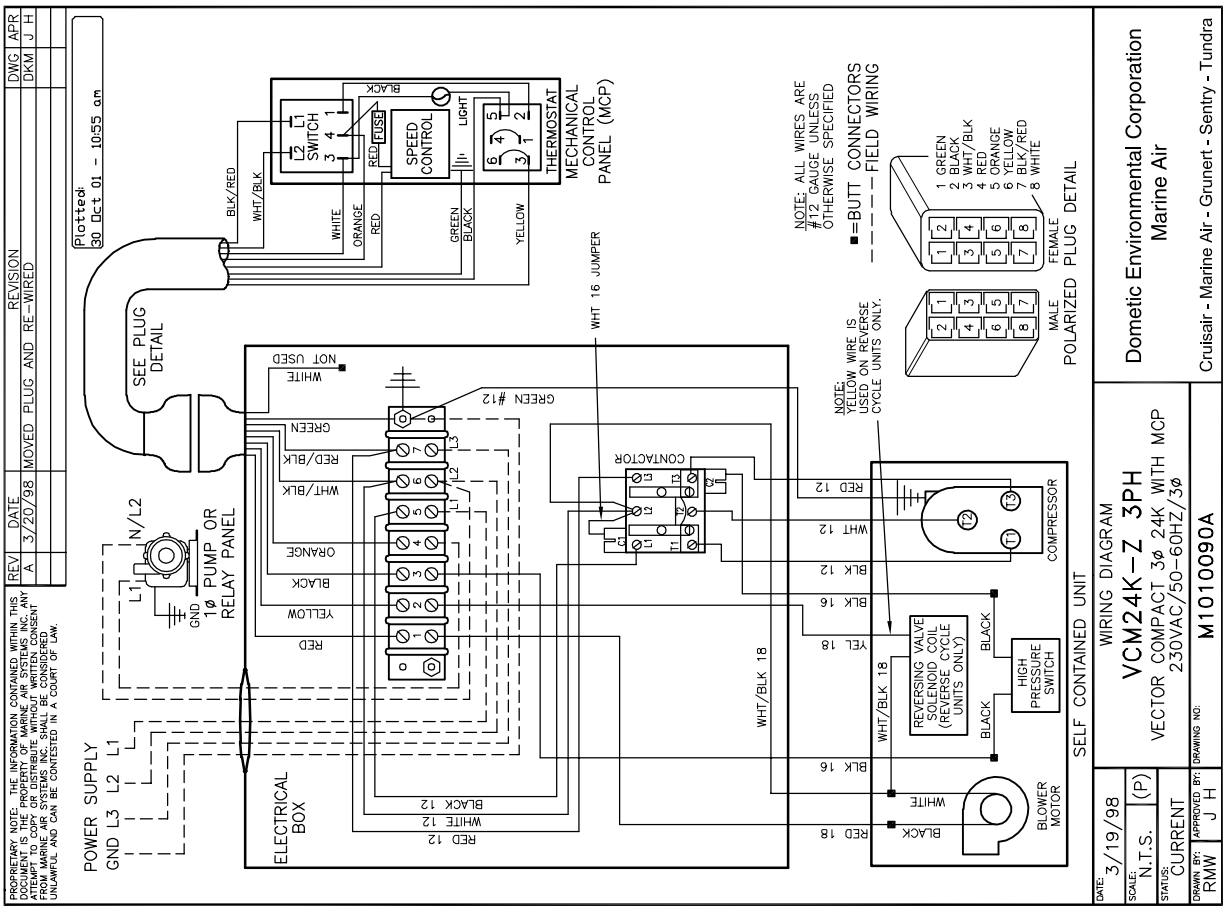
REV DATE REVISION DESCRIPTION DWG APR
D 07/21/00 ADDED PART NUMBER,CAD402-00 RMW R P
E 01/16/01 COMP WIRES TO 14GA,CAD046-01 RMW R P
F 8/29/01 ADDED NOTE TO PTCR,CAD859-01 DRR RAP
(10-16K ONLY)
ASSIST PTCR START
Dometic Environmental Corporation - Marine Air
VCM5-16K(-Z/C/CZ) VECTOR COMPACT W/MCP
115-230VAC/50-60HZ/1Ø
DATE: 1/19/98 DWG BY: RMW PART NUMBER: M1010086 ≧O.I.
SCALE: NTS APR BY: JH ID 291-048269 DWG

Fig 10. Wiring Diagrams for Mechanical Controls (VCM5-16HV & 24K 230V/3Ph)



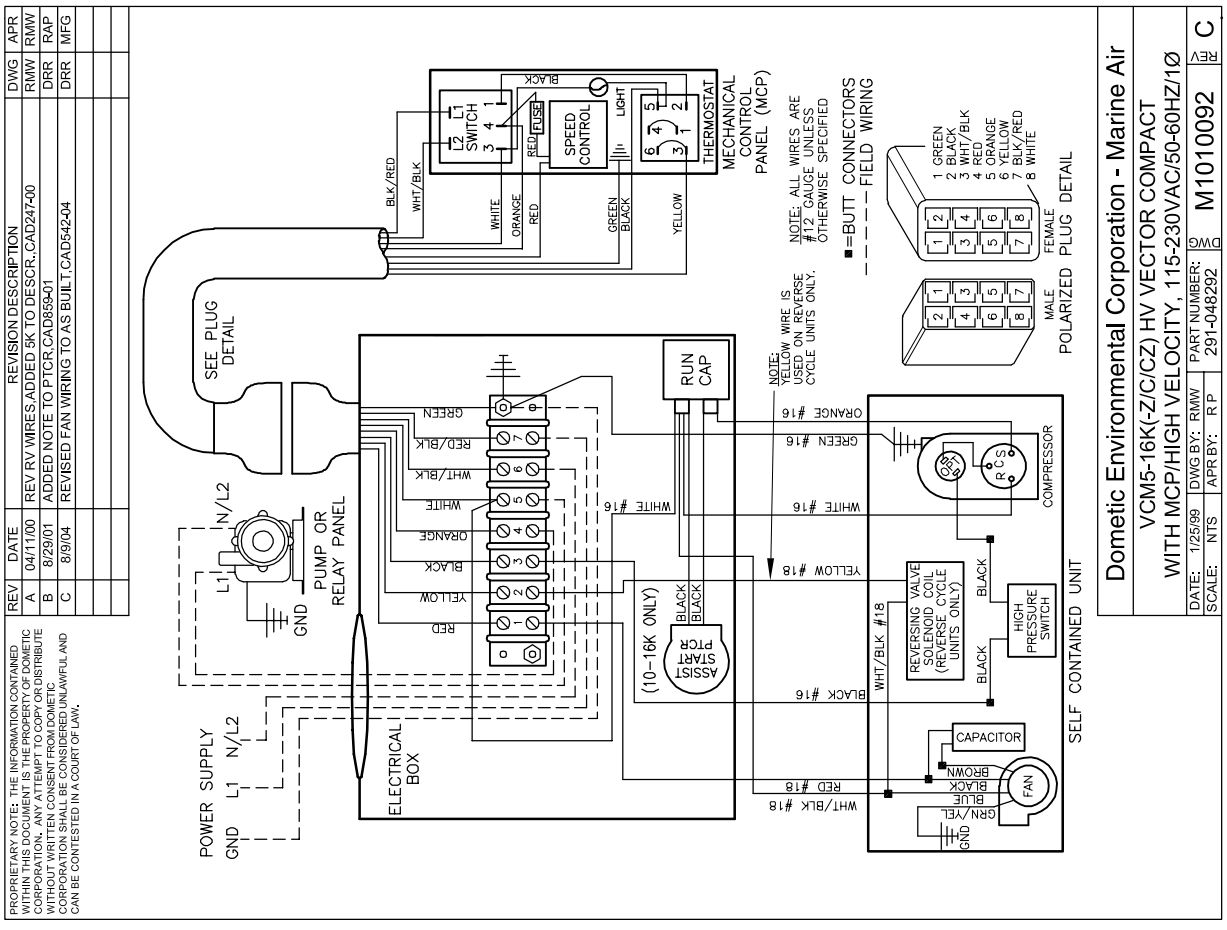
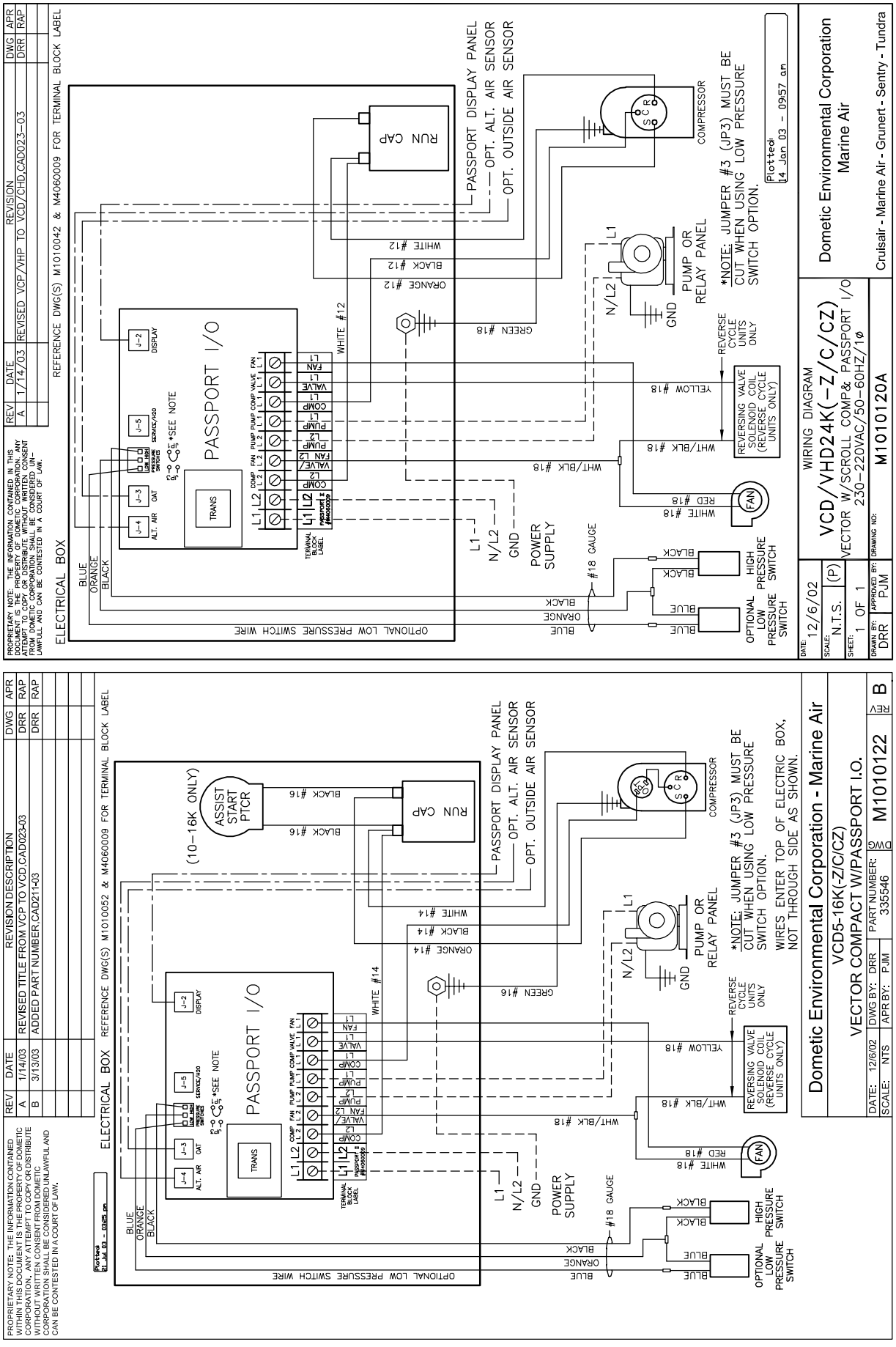


Fig 11. Wiring Diagrams for Digital Controls (VCD5-16 & VCD/VHD 24K)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REV DATE REVISION DWG APR
A 1/14/03 REVISED TITLE FROM VCP TO VCD,CAD023-03 DRR RAP
B 3/13/03 ADDED PART NUMBER,CAD211-03 DRR RAP
ELECTRICAL BOX
REFERENCE DWG(S) M1010052 & M4060009 FOR TERMINAL BLOCK LABEL
(10-16K ONLY)
ASSIST START PTCR
RUN CAP
PASSPORT DISPLAY PANEL
OPT. ALT. AIR SENSOR
OPT. OUTSIDE AIR SENSOR
COMPRESSOR
PUMP OR RELAY PANEL
*NOTE: JUMPER #3 (JP3) MUST BE CUT WHEN USING LOW PRESSURE SWITCH OPTION.
WIRES ENTER TOP OF ELECTRIC BOX, NOT THROUGH SIDE AS SHOWN.
REVERSE CYCLE UNITS ONLY
REVERSING VALVE SOLENOID COIL (REVERSE CYCLE UNITS ONLY)
HIGH PRESSURE SWITCH
OPTIONAL LOW PRESSURE SWITCH
OPTIONAL LOW PRESSURE SWITCH WIRE
PASSPORT I/O
TRANS
POWER SUPPLY
#18 GAUGE
Dometic Environmental Corporation - Marine Air
VCD5-16K(-Z/C/CZ)
VECTOR COMPACT W/PASSPORT I.O.
DATE: 12/6/02 DWG BY: DRR PART NUMBER: 335546 DWG M1010122 REV B
SCALE: NTS APR BY: PJM
Plotted: 21 Jul 03 - 0825 am
REV DATE REVISION DWG APR
A 1/14/03 REVISED VCP/VHP TO VCD/CHD,CAD023-03 DRR RAP
REFERENCE DWG(S) M1010042 & M4060009 FOR TERMINAL BLOCK LABEL
WIRING DIAGRAM
VCD/VHD24K(-Z/C/CZ)
VECTOR W/SCROLL COMP& PASSPORT I/O
230-220VAC/50-60HZ/1ø
DATE: 12/6/02
SCALE: N.T.S. (P)
SHEET: 1 OF 1
DRAWN BY: DRR APPROVED BY: PJM
DRAWING NO: M1010120A
Plotted: 14 Jan 03 - 0957 am
Dometic Environmental Corporation
Marine Air
Cruisair - Marine Air - Grunert - Sentry - Tundra

Fig 12. Wiring Diagrams for Digital Controls (VCD5-16HV & VCD/VHD 24K 460V/3Ph)

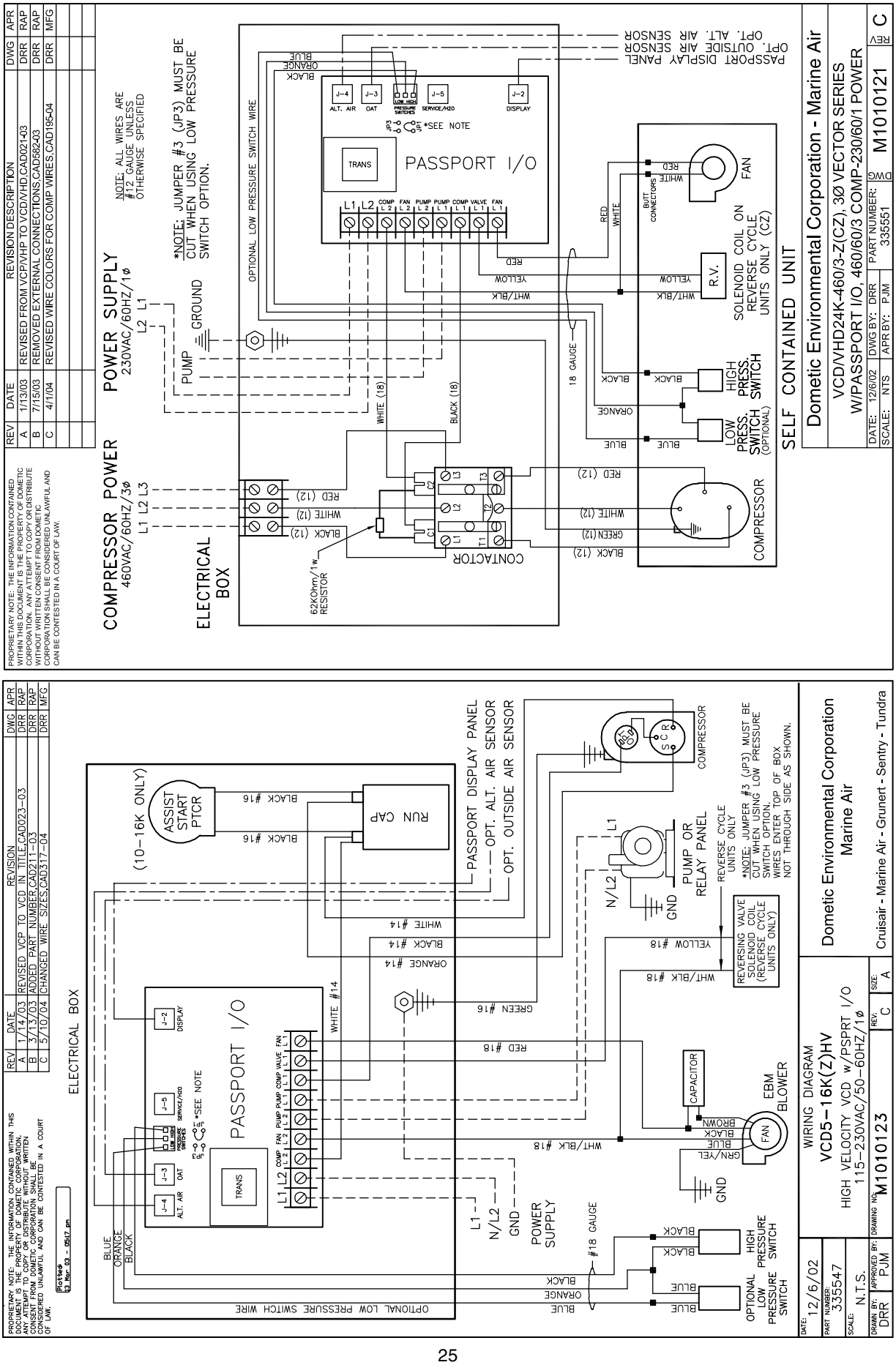
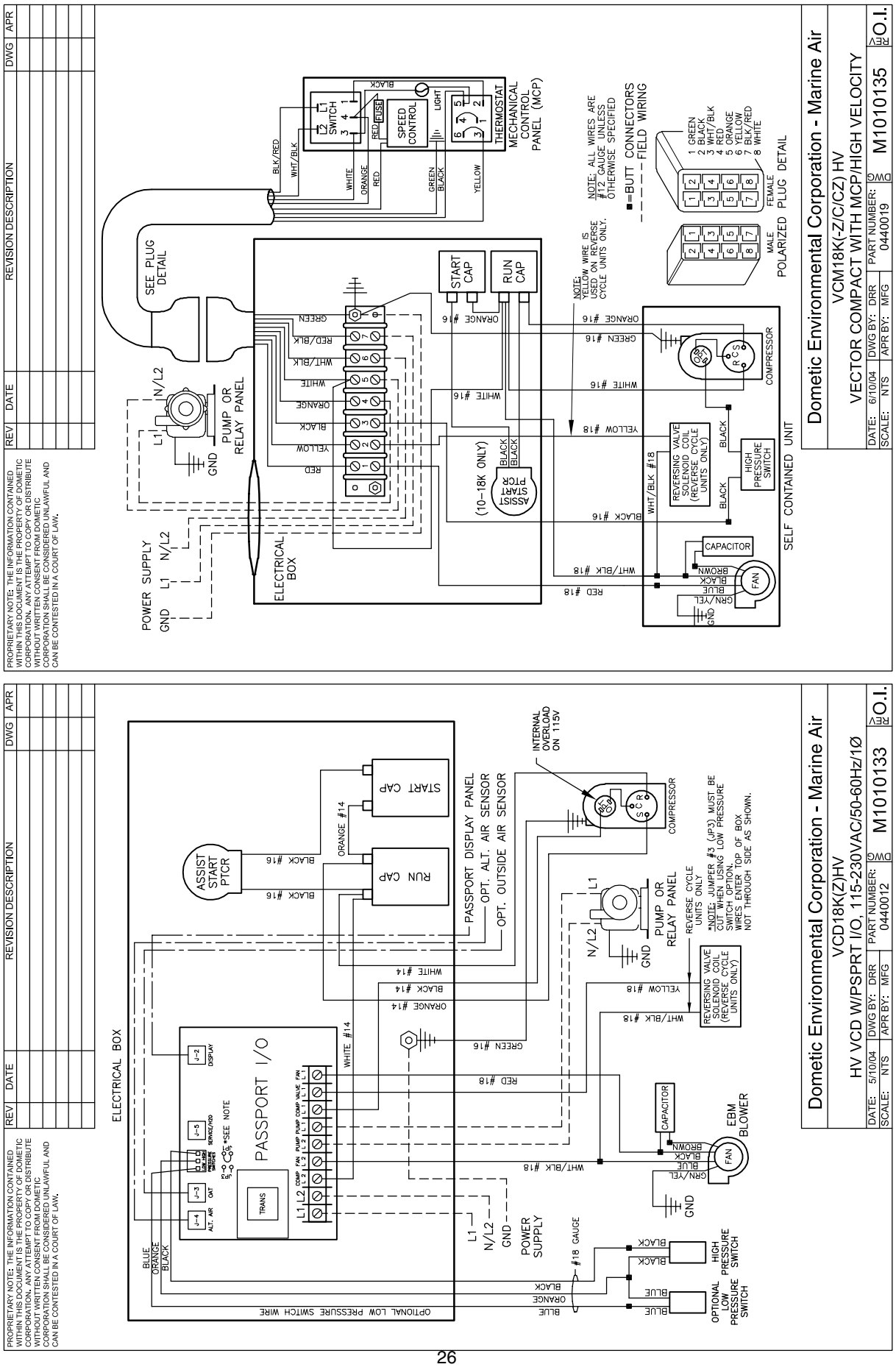


Fig 13. Wiring Diagrams for Digital Controls (VCD18K-HV & VCM18K-HV)


Dometic Environmental Corporation - Marine Air
VCM18K(-Z/C/CZ) HV
VECTOR COMPACT WITH MCP/HIGH VELOCITY
DATE: 6/10/04 DWG BY: DRR PART NUMBER: M1010135
SCALE: NTS APR BY: MFG 0440019
REVISION DESCRIPTION
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POWER SUPPLY
GND L1 N/L2
ELECTRICAL BOX
SEE PLUG DETAIL
PUMP OR RELAY PANEL
START CAP
RUN CAP
(10-18K ONLY)
ASSIST START PTCR
MECHANICAL CONTROL PANEL (MCP)
SPEED CONTROL
THERMOSTAT
L1 SWITCH
REVERSING VALVE SOLENOID COIL (REVERSE CYCLE UNITS ONLY)
HIGH PRESSURE SWITCH
COMPRESSOR
CAPACITOR
FAN
NOTE: ALL WIRES ARE #12 GAUGE UNLESS OTHERWISE SPECIFIED
■=BUTT CONNECTORS
– – – – FIELD WIRING
1 GREEN
2 BLACK
3 WHT/BLK
4 RED
5 ORANGE
6 YELLOW
7 BLK/RED
8 WHITE
MALE POLARIZED PLUG DETAIL
FEMALE
SELF CONTAINED UNIT
Dometic Environmental Corporation - Marine Air
HV VCD W/PSPRT I/O, 115-230VAC/50-60Hz/1Ø
DATE: 5/10/04 DWG BY: DRR PART NUMBER: M1010133
SCALE: NTS APR BY: MFG 0440012
ELECTRICAL BOX
PASSPORT I/O
TRANS
PASSPORT DISPLAY PANEL
OPT. ALT. AIR SENSOR
OPT. OUTSIDE AIR SENSOR
INTERNAL OVERLOAD ON 115V
REVERSE CYCLE UNITS ONLY
*NOTE: JUMPER #3 (JP3) MUST BE CUT WHEN USING LOW PRESSURE SWITCH OPTION. WIRES ENTER TOP OF BOX NOT THROUGH SIDE AS SHOWN.
OPTIONAL LOW PRESSURE SWITCH WIRE
OPTIONAL LOW PRESSURE SWITCH
HIGH PRESSURE SWITCH
EBM BLOWER
POWER SUPPLY
#18 GAUGE

Dometic Environmental Corporation

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For Sales and Service Calls within Europe and the Middle East, please contact +44 (0) 870 330 6101
Website: www.marineair.com • Email: sales@marineair.com